IN THE CLAIMS:

Kindly replace the claims of record with the following full set of claims:

1. (Currently amended) An encoding method for the compression of a video sequence divided in groups of frames decomposed by means of a three-dimensional (3D) wavelet transform leading to a given number of successive resolution levels corresponding to the decomposition levels of said transform, said method being based on a hierarchical subband encoding process leading from the original set of picture elements (pixels) of each group of frames to transform coefficients constituting a hierarchical pyramid, and a spatio-temporal orientation tree - in which the roots are formed with the pixels of the approximation subband resulting from the 3D wavelet transform and the offspring of each of these pixels is formed with the pixels of the higher subbands corresponding to the image volume defined by these root pixels – defining the spatio-temporal relationship inside said hierarchical pyramid, said encoding method comprising the steps of:

(A) preserving the initial subband structure of the 3D wavelet transform by scanning the subbands one after the other in an order that respects the parent-offspring dependencies formed in said spatio-temporal tree ;

(B) adding "off / on" flags to each coefficient of the spatio-temporal tree in view of a progressive transmission of the most significant bits of the coefficients, these flags being such that at least one of them describes the state of significance of a set of pixels and at least another one describes the state of significance of a single pixel, wherein two flags describe the state of significance of a set of pixels and are, for each coefficient (x,y,z) of said spatio-temporal tree :

- FS1 if D(x,y,z) is still insignificant ;
- FS2 if L(x,y,z) is still insignificant ;

where D(x,y,z) is the set of coordinates of all the descendants of the node (x,y,z) and L(x,y,z) = D(x,y,z) - 0(x,y,z), with 0(x,y,z) is the set of coordinates of the direct offspring of the node (x,y,z), and

two flags describe the state of significance of a single pixel and are :

- FP3 if the current pixel is significant ;

- FP4 if it is not significant or if its significance is to be analyzed.

2. (Previously Presented) The encoding method according to claim 1, wherein for each bitplane, the tree scanning is spatially oriented, all the temporal resolutions being successively scanned inside each spatial scale and resolution flags being introduced between any two spatial scales.

3. (Previously Presented) The encoding method according to claim 1, wherein for each bitplane, the tree scanning is temporally oriented, all the spatial resolutions being successively scanned inside each temporal scale and resolution flags being introduced between any two temporal scales.

4. (Previously Presented) The encoding method according to claim 1, wherein for each bitplane, an intermediate tree scanning is performed, all the temporal and spatial resolutions of the same scale being jointly scanned and resolution flags being introduced between any two spatial/temporal scales.

5. (Cancelled).

6. (Currently amended) The encoding method according to claim [[5]] 1, wherein the exploration of the spatio-temporal tree, implemented in said scanning order, includes, after an initialization step where the flag FP4 is put to all the coefficients of the lowest spatio-temporal subband and the flag FS1 to 7 over 8 coefficients of said lowest spatio-temporal subband, and the maximum significance level MSL is calculated, the following steps, carried out from the bitplane n = MSL down to the bitplane n = 0 and from the lowest subband resolution down to the highest one :

(a) a first set of tests related to the set significance ;

(1) if the flag FS1 is "on", then output S_n (D(x,y,z)) :

- if S_n (D(x,y,z)) = 1, then :

- for each (x',y',z') in O(x,y,z), put flag FP4 ;

- remove flag FS1 from (x,y,z) ;
- if L(x,y,z) not empty, then put flag FS2.

(2) if flag FS2 is "on", then output S_n (L(x,y,z)) :

- if S_n (L(x,y,z)) = 1, then :
  - for each (x',y',z') in O(x,y,z), put flag FS1 ;
  - remove flag FS2 from (x,y,z).

(b) a second set of tests related to the pixel significance :

(1) if the flag FP3 is "on", then output = the n-th bit of (x,y,z) ;

(2) if the flag FP4 is "on", then output S_n (x,y,z) :

- if S_n(x,y,z) = 1, then :
  - put flag FP3 "on" ;
  - output sign (x,y,z) ;
  - and remove flag FP4.

7. (Previously Presented) The encoding method according to claim 1 further comprising the step of:

partially decoding the bitstream between two resolution flags, leading to a lower resolution/frame rate reconstructed video sequence.

8. (Previously Presented) The encoding method according to claim 7, wherein the context used for the encoding of each bit related to the set significance in an arithmetic coding module is built using the bits of the same bitplane of the last scanned neighboring wavelet coefficients in the same spatio-temporal subband, these bits being the bits output during the first set of tests related to the set significance.

9. (Previously Presented) The encoding method according to claim 7, wherein the context used for the encoding of each bit related to the pixel significance in an arithmetic coding module is built using the bits of the same bitplane of the last scanned neighboring wavelet coefficients in the same spatio-temporal subband, these bits being 1 if the neighboring coefficients are marked by an FP3 flag and 0 if not.

10. (Currently amended) An encoding system for the compression of a video sequence divided in groups of frames decomposed by means of a three-dimensional (3D) wavelet transform leading to a given number of successive resolution levels corresponding to the decomposition levels of said transform, said method being based on a hierarchical subband encoding process leading from the original set of picture elements (pixels) of each group of frames to transform coefficients constituting a hierarchical pyramid, and a spatio-temporal orientation tree - in which the roots are formed with the pixels of the approximation subband resulting from the 3D wavelet transform and the offspring of each of these pixels is formed with the pixels of the higher subbands corresponding to the image volume defined by these root pixels – defining the spatio-temporal relationship inside said hierarchical pyramid, said encoding system comprising:

a processor in communication with a memory, said processor executing code for:

(A) preserving the initial subband structure of the 3D wavelet transform by scanning the subbands one after the other in an order that respects the parent-offspring dependencies formed in said spatio-temporal tree; and

(B) adding "off / on" flags to each coefficient of the spatio-temporal tree in view of a progressive transmission of the most significant bits of the coefficients, these flags being such that at least one of them describes the state of significance of a set of pixels and at least another one describes the state of significance of a single pixel, wherein two flags describe the state of significance of a set of pixels and are, for each coefficient (x,y,z) of said spatio-temporal tree :

- FS1 if D(x,y,z) is still insignificant ;
- FS2 if L(x,y,z) is still insignificant ;

where D(x,y,z) is the set of coordinates of all the descendants of the node (x,y,z) and L(x,y,z) = D(x,y,z) - 0(x,y,z), with 0(x,y,z) is the set of coordinates of the direct offspring of the node (x,y,z), and

two flags describe the state of significance of a single pixel and are :

- FP3 if the current pixel is significant ;
- FP4 if it is not significant or if its significance is to be analyzed.

11. (Previously Presented) The system as recited in claim 10, wherein said code is stored in said memory.

12. (Previously Presented) The system as recited in claim 12, further comprising:

an input/output device in communication with said processor and said memory.